

SS-C

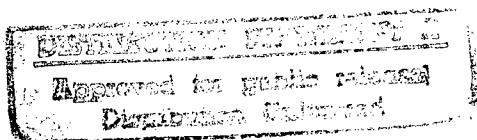
JPRS: 4872

RESIN FILE

14 August 1961

ON THE LITTORALS OF THE CHINA SEAS

by O. B. Mokiyevskiy



19980127 188

This material, translated under U. S. Government auspices, is distributed for scholarly uses to repository libraries under a grant/subscription arrangement with the Joint Committee on Contemporary China of the American Council of Learned Societies and the Social Science Research Council. The contents of this material in no way represents the policies, views, or attitudes of the U. S. Government or the other parties to the arrangement. Queries regarding participation in this arrangement should be addressed to the Social Science Research Council, 230 Park Avenue, New York 17, New York.

U. S. JOINT PUBLICATIONS RESEARCH SERVICE
1636 CONNECTICUT AVENUE, N. W.
WASHINGTON 25, D. C.

DTIC QUALITY INSPECTED

FOREWORD

This publication was prepared under contract by the UNITED STATES JOINT PUBLICATIONS RESEARCH SERVICE, a federal government organization established to service the translation and research needs of the various government departments.

Subscribing Repositories

SS-C

University of Arizona
Tucson, Arizona

Mathews Library
Arizona State University
Tempe, Arizona

Non-Western Program
Atlanta University Center
Atlanta 3, Georgia

University of British Columbia
Vancouver 8, Canada

State Paper Room
British Museum
London, W.C. 1, England

General Library
University of California
Berkeley 4, California

Center for Chinese Studies
University of California
Berkeley 4, California

Government Publications Room
University of California
Los Angeles 24, California

Serial Records Department
University of Chicago Library
Chicago 37, Illinois

The General Library
University of Cincinnati
Cincinnati, Ohio

Director, East Asian Institute
Columbia University
433 West 117th Street
New York 27, N. Y.

Librarian, East Asiatic Library
Columbia University
New York 27, New York

Univ. of Nebraska Library
Lincoln 8, Nebraska

Wason Collection
Cornell University Library
Ithaca, New York

Council on Foreign Relations
58 East 68th Street
New York 21, New York

Baker Library
Dartmouth College
Hanover, New Hampshire

Denison University Library
Granville, Ohio

Duke University Library
Durham, North Carolina

Centre de Documentation: Chine
Ecole Pratique des Hautes Etudes
10 Rue Monsieur-le-Prince
Paris 6, France

Fletcher School of Law and Diplomacy
Tufts University
Medford, Massachusetts

Harvard College Library
Cambridge 38, Massachusetts

Center for East Asian Studies
Harvard University
16 Dunster Street
Cambridge 38, Massachusetts

Harvard-Yenching Institute
Cambridge 38, Massachusetts

University of Hawaii
Honolulu 14, Hawaii

The Hoover Institution
Stanford, California

University of Illinois Library
Urbana, Illinois

Utah State University Library
Logan, Utah

Indiana University Library
Bloomington, Indiana

Institut für Politische Wissenschaften
Technische Hochschule
Vinzenzstrasse, 22a
Aachen, Germany

Institute de Sociologie Solvay
Rue du Chatelain, 49
Brussels, Belgium

State University of Iowa Library
Iowa City, Iowa

Documents Librarian
University Library
Lawrence, Kansas

University of Kentucky Libraries
Lexington, Kentucky

Library Association of Portland
801 S.W. 10th Avenue
Portland 5, Oregon

Librarian, School of Oriental and
African Studies
University of London
London, W.C. 1, England

Asia Library
University of Michigan
Ann Arbor, Michigan

University of Michigan Library
Ann Arbor, Michigan

Michigan State University Library
East Lansing, Michigan

Ohio State University Libraries
1858 Neil Avenue
Columbus 10, Ohio

University of Oregon Library
Eugene, Oregon

Pennsylvania Military College
Chester, Pennsylvania

Pennsylvania State University Library
University Park, Pennsylvania

University of Pittsburgh Library
Pittsburgh 13, Pennsylvania

Princeton University Library
Princeton, New Jersey

Purdue University Libraries
Lafayette, Indiana

Research Institute on the Sino-
Soviet Bloc
P. O. Box 3521
Washington 7, D.C.

Institute of Asian Studies
St. John's University Graduate School
Jamaica 32, New York

University of San Francisco
San Francisco 17, California

Seton Hall University
University College
South Orange, New Jersey

McKissick Memorial Library
University of South Carolina
Columbia 1, South Carolina

University of Southern Calif. Library
Los Angeles 7, California

Morris Library
Southern Illinois University
Carbondale, Illinois

Serials and Documents
Joint University Libraries
Nashville 5, Tennessee

University of Texas Library
Austin 12, Texas

University of Vermont Library
Burlington, Vermont

Alderman Library
University of Virginia
Charlottesville, Virginia

Far Eastern Library
University of Washington
Seattle 5, Washington

General Library
University of Washington
Seattle 5, Washington

University of Western Australia
Nedlands, Australia

Yale University Library
New Haven, Connecticut

JPRS: 4872

CSO: 1930-S

ON THE LITTORALS OF THE CHINA SEAS

Following is the translation of an article by O. B. Mokiyevskiy in Priroda (Nature), No 6, Moscow, 1961, pages 93-97.

From time immemorial the Chinese people have been using the gifts of the sea which are left in the shore tidal belt (on the littoral); their collection does not require complicated devices and expensive implements. On the shores of the Yellow Sea, during ebb tide we as a rule observed dozens of persons gathering mollusks, crabs, trepangs, and seaweed. There are more than 60 species of food mollusks alone along the littorals of the China Seas. Here can be found various species of oysters and midia, venerupis, morskoy cherenok (sea handle), krasavets galictis (*Haliotis* beauty) and others. The latter is found within the Southern limits of our Far Eastern Seas, but it is best known in our country by Vrubel's painting "The Pearl". As for Crustacea along the littorals, clumsy looking spectre crayfish are caught, as well as praying crayfish, who can pinch painfully with their thorny claws, as well as various, mostly small varieties of crabs and shrimp.

Trepangs and other holothuria, sea urchins as well as various species of seaweed are collected, not to mention fish, some species of which burrow into the silt when the tide goes out (for example, representatives of the Belonidae family), while others remain in tide pools or can be caught by nets at the edge of the water. The practice of collecting all these organisms, which has lasted throughout more than a 1000 year span, has resulted in the development of many clever methods and devices, which our expeditions studied with great interest. In order to extract spectre crayfish from their extremely deep holes, the local people push brushes made of sheep's wool into these holes. Evidently upon attempting to clear out their holes from this foul smelling object, the crayfish become caught in the wool with their claws. Gatherers of salt mollusks remove the upper layer of soil with small shovels, in order to uncover the aperture to the long underground passage, which has been washed away by the sand.

They pour a little ordinary boiled salt into the aperture, from which the mollusc immediately crawls out, and they use the shovel to cut off his retreat. They dig out the *Venerupis*, which inhabits extremely stony soil, with special three-toothed rakes. In order to move across the marshy-silty ground, local inhabitants make use of devices which are similar to our scooters, but without wheels. The gatherer stands on one leg on the plank (it is also possible to place the basket with the catch on it) and, holding on to the handle with his hands, pushes himself along the ground with the other leg. In some areas movement without this scooter is extremely tiring, and in some places it is impossible. In recent years in the CPR they have begun to make a transition to a more efficient method of making use of seaweed and sea animals, developing artificial breeding. The shores of the China Seas are covered by a network of experimental and food gathering stations, at which sea cabbage-laminaria, formerly not found in Chinese waters, oysters, *midia*, *venerupis* are bred. The increased interest on the part of our friends toward the study of the plant and animal world of the littorals and the laws of its development is understandable. They brought in for this job the representatives of two USSR scientific collectives. In 1957-1960, the joint expedition of the Zoological Institute of the Academy of Sciences USSR and the Institute of Oceanology of the Academy of Sciences CPR carried out, under the direction of Professor Ye. F. Gur'yanova and Professor Chang Hsi, detailed bionomic studies of the littorals of the Shantung Peninsula and Hainan Island.¹ Our projects (Institute of Oceanology of the Academy of Sciences USSR) were directed toward a comparative-geographical and comparative-ecological study of the littorals of typical regions of all three seas of the CPR, chiefly from a quantitative point of view. The study of the upper sublittoral was carried out with the use of light diving equipment (oxygen equipment and SCUBA equipment). We aided our Chinese comrades in mastering this equipment and underwater investigation methods. The Chinese-Soviet coastal expedition of the Institutes of Oceanology of the Academy of Sciences (AS) USSR and the AS CPR studied the regions around the cities of Taliensh and Tsingtao (in the Yellow Sea), Puto Shan in the Chu Shan Archipelago (East China Sea), the region of the city of Chankiang and Nao Chow Island (in the South China Sea). Joint projects were begun in Tsingtao.

Here only a comparatively small number of mass forms of flora and fauna were found to coincide with ours along our Southern littoral, and the species broadly distributed in the Temperate Zone in the region of Tsingtao are practically non-existent. The basic fauna of the Yellow Sea is made up of tropical genera and species, as is correctly noted

by Ye. F. Gur'yanova², relating this fauna to the greatly impoverished subtropical province of the Indo-Western-Pacific tropical region. Although due to an insufficient degree of independence of floral-fauna composition of the littoral of the Yellow Sea (evidently as in other subtropical seas), it is impossible to place it into a separate biogeographical region or subregion, according to quantitative indices, according to biocoenose composition and mass forms, the littoral of this sea should be separated into a distinct type, differing considerably both from the tropical and the Southern-boreal. This littoral is allied with the tropics by the similarity of the systematic fauna composition, with the Southern-boreal littoral -- by rather sharp seasonal changes. In the summer in Tsingtao, according to the data of Ye. F. Gur'yanova, J. Y. Liu and others (1958), the species of crabs *Scopimera globosa* and *Ilyoplax* (2 species) are found in abundance. Working on 14 October on the same beach (Tsangkou), we did not find these crabs, and we do not find them in October in the Yellow Sea, nor the remarkable flying fishes from the Periophthalmidae family. The littoral of the Liao-tung Peninsula in the region of Taliens is very similar to the littoral of the Tsingtao region both according to qualitative composition of flora and fauna and according to quantitative indices. However, there are certain differences. The oyster *Ostrea cucullata* which is extremely common in Tsingtao is replaced here by the larger *Ostrea talienwhanensis*, which is not to be found in such great numbers. Rather abundant are such Southern-boreal forms, not found in Tsingtao, as the sea urchin *Strongylocentrotus nudus* or the crab *Cancer amphioetus*, as well as the midia *Mytilus edulis* and the species of seaweed *Rhodomela larix* and *Sargassum Kjellmanianum*, widely distributed throughout waters in the Temperate Zone. All of this gives the littoral of the Liao-tung Peninsula, in comparison with the Shantung (in the region of Tsingtao) a more Northern appearance.

We studied the littoral of the Northern part of the East China Sea on the island of Puto Shan, formerly one of the religious Buddhist centers. Here can be seen the influence of the Yangtze River, somewhat diluting the salt water and bringing a tremendous quantity of suspended particles. The murky brown water made it useless even to think of working with diving equipment. Jumping somewhat ahead, we shall mention that in the South China Sea, in the region of Chankiang and even on Nao Chow Island, dozens of kilometers from the shore, we had the same bad luck. Going down in diving equipment onto the submerged coral reefs, we could not even see them. The most transparent water throughout our itineraries was to be found in the Yellow Sea, which certainly did not receive its name due to its crystal clarity. This high

degree of transparency, sufficient for carrying out under-water investigations, was characteristic only to the regions of Tsingtao and Talien, that is, the external sections of the Yellow Sea. The littoral of the island of Puto Shan, somewhat impoverished due to the infusion of fresh water, has more characteristic warm-water features (for example, mass development of feeler-legged creatures -- the large sea acorn and sea duck (*Mitella mitella*)). The subtropical nature of the littoral of the East China Sea is manifested in sharp seasonal changes in the composition of its fauna. Working here in the second half of November together with a great expert on the island's fauna, Professor Tung Yu-mao, we were able to confirm its significant winter impoverishment. In the South China Sea, in the area of the new port of Chankiang, we were able to make a fairly detailed study along the littoral of mangrove thickets (*avicennia*, as well as *rizofora*). The trunks of these trees contain large numbers of oysters and crayfish which inhabit the stony soils. On the trunks and in the hollows of the *avicennia* we found the same crabs, molluscs and isopods which we found on rocks and stone fields. Of the material processed up to the present, only one mollusc, *Littorinopsis* sp., was found exclusively on mangrove trees. It was the same with the fauna of the silt soil mangrove thickets. It was almost identical in composition with the population of the monotype silts and silt sands, but without mangroves. The same species of crab ("beckoning crab" -- *Uca*, the crab *Macrophthalmus*, with long stick-like eyes and others), the same species of molluscs, polychaetes, nemerteans, starworms, praying crayfish, silt jumpers, etc. The biomass, however, is frequently several times greater under the shelter of the mangroves (up to ten). Engaging in a quantitative count of the population of mangrove thickets, naturally we were not able to deal with the mangroves themselves. Ordinary forestry methods were, under the conditions of the mangrove swamps, extremely labor consuming. Nevertheless, we were able to obtain for the *avicennia* thickets in the Chankiang region approximate indices of their biomass, which fluctuates between 5 and 15 kg/m². The figures were rather low, less than, for example, the biomass of the *laminaria* seaweed clusters in our Northern seas. However, one should take into consideration that our figures are either for dense but young mangrove thickets or for communities of adult trees (up to 3 meters high), but thinned out. This region, as perhaps the entire China littoral, lacks dense thickets of adult trees, evidently due to the fact that mangroves are also used by local population: the wood -- for articles, and the leaves -- for sideral fertilizer. In certain places sections of the mangrove littoral are diked up, the trees are pulled out of these sections,